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ABSTRACT

An overview of national and international research on school effectiveness is provided in this paper. Following an introduction, the first section examines some national studies, with a focus on the differences in empirical evidence for effective school factors. These studies are similar in that they are outcome-oriented, seek factors of school effectiveness, and combine theory with practice. A conclusion is that differences among countries are due not only to contextual factors, but to conceptual/methodological problems. The third section describes studies being conducted by the International Association for the Evaluation of Educational Achievement (IEA) and the Educational Testing Service (ITS). Conclusions are that secondary analysis of available international databases is useful to illustrate the differences among countries in terms of educational outcomes and determinants of educational effectiveness, and that international studies are strong in outcome measurement, but weak in determining factors at different levels. The concluding section suggests that school effectiveness research needs to develop a multilevel, multifactor framework that utilizes outcome-oriented measurement. Five tables and three figures are included. (15 references) (LMI)

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NATIONAL AND INTERNATIONAL SCHOOL-EFFECTIVENESS RESEARCH IN RETROSPECT AND PROSPECT

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1. Introduction

Looking back to school-effectiveness research at this moment, one can conclude that different pieces of educational research in the past contribute to school-effectiveness. The start of school-effectiveness as a movement that influenced research-policy and educational practice is definately related to the research by Brookover (1979) and the combination of research and improvement by Edmunds. In fact, school-effectiveness as a movement within education was a more optimistic reaction to the pessimistic ideas and opinions about the contributions of education to outcomes, especially for disadvantaged groups. Based on the disappointing results of the special programs in the years before and the publications of researchers as Jencks and Coleman, the conclusion was drawn that schools and teachers did not matter and, in fact, education did not matter at all. Education was not an instrument to compensate for differences between students based on intelligence and social background. It was even difficult to find characteristics of teachers and schools that contribute to the quality of eduction, i.e. that could explain the differences in learning-results of comparable groups of students. Brookover and other researchers of that period proved that schools achieved different results with comparable groups of students.

Thus, schools do matter. Based on that conclusion, numerous research-projects started in order to find the characteristics of effective schools. Later on, these characteristics have been summarized in so-called factor-models; factors that contribute to educational effectiveness (at the beginning the school-effectiveness movement was strongly connected with the ideal of enlarging the equity in education. Later on, however, it turned out that effective schools were not just good for (did not just work for) disadvantaged groups of students, but also for the better students). These results were most of the time based on research in the United States, although, especially in the late seventies and eighties, school-effectiveness research was also carried out in other countries. Internationally, the research carried out by Rutter et al. (1979) and Mortimer et al. (1988) in the United Kingdom draw attention. Other countries with a considerable amount of research on school-effectiveness are The Netherlands, Canada and Australia. In 1988, the first international conference on school-effectiveness improvement was organized in London and the International Congress for School Effectiveness and Improvement (ICSEI) was founded. About 15 countries participated in this Congress and informed one another about the progress made in educational effectiveness. Later on, congresses were held in Rotterdam, Jerusalem, Cardiff and Victoria (British Columbia). In these meetings, the international attention for school-effectiveness was demonstrated. It also became clear, as was published in various research reports, that the factors that contributed to educational effectiveness did not work to the same extent in different countries. This was partly the result of the way the research was carried out and the conceptual models were used in

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different countries, but also of the contextual differences between countries. It became clear that for the development of a knowledge-base on effective schools we need international research in which the contextual setting of the education within different countries can also be investigated.

In the next section we will first deal with some national studies, espially to look at the differences in empirical evidence for so-called effective school-factors (section 2). In the following section (3), attention will be given to the international studies. Based on the conclusions about the flaws and strengths of these kinds of research the final section (4) will sketch the requirements for the future research-agenda in this field.

2. National studies on effective schools

In the United States in the seventies and eighties quite a lot of research was carried out into the characteristics of effective schools, and how to improve schools according to these characteristics. After a while, factor-models were developed that were based on this research, suggesting that by this specific set of factors the effectiveness of schools could be explained (and improved). The most famous factor-model is Edmund's 5-factor model, especially because it was restricted to only 5 factors by which education in general and schools in particular could be improved to get better results and to contribute to educational equity. These 5 factors were:

- Strong educational leadership
- Emphasis on basic skills
- A safe and orderly climate
- Frequent evaluation of the pupil's progress
- High expectations of the student's achievements

Although almost every presentation about effective schools in the United States starts with the confession that the presentor does not believe in the 5-factor model anymore, this 5-factor model heavily influenced research and educational practice in the United States. Based on these factors improvement-programs were developed, and especially the training of principals into educational and instructional leadership were organized. The presentations at the AERA of the last couple of years in the field of school-effectiveness deal with the results of these training-programs for principals (without even phrasing the question of the effectiveness later on in the schools of these well-trained principals in terms of student-outcomes). With more or less creativity and imagination the current movement of restructuring schools can be connected with these 5 factors, because what they aim at is to improve the educational practice within schools by developing and improving the curriculum of the schools and the organization (some of the factors are connected with organization, others, such as the objectives and the evaluation, with the idea of the curriculum and the instruction-process).

Edmunds claimed that the 5-factor model is based on his own and others' research. One of the latest reviews of the research-literature on school-effectiveness was carried out by Levine and Lezotte and published in Unusually Effective Schools (1990). It becomes clear from their review that it is not possible anymore to provide easy recipies for educational effectiveness; it is not possible to improve a few components of education to get better

results. On the contrary, many factors all contribute a little to improvement of education. The list of Levine and Lezotte is a mixture of factors on different levels within the school connected with all the participants in the educational process as shown in the following enumeration of factors:

* Productive School Climate and Culture
* Focus on Student Acquisition of Central learning Skills
* Appropriate Monitoring of Student Progress
* Practice-Oriented Staff Development at the School Site
* Outstanding Leadership
* Salient Parent Involvement
* Effective Instructional Arrangements and Implementation
* High Operationalized Expectations and Requirements for Students
* Other Possible Correlates

(Levine and Lezotte, 1990, p.10)

Each of the factors ('characteristics' according to Levine and Lezotte) is a container of subordinated characteristics, e.g. 'Effective Instructional Arrangements and Implementation' is more or less a combination of effective teaching characteristics. It contains:

- Successful grouping and related organizational arrangements
- Appropriate pacing and alignment
- Active/enriched learning
- Effective teaching practices
- Emphasis on higher order learning in assessing instructional outcomes
- Coordination in curriculum and instruction
- Easy availability of abundant, appropriate instructional materials
- Classroom adaptation
- Stealing time for reading, language and math

The fact thatLevine and Lezotte include a special list for low SES schools (based on Hallinger and Murphy, 1986) points to the progress in research on quality and equity in education and the change of opinions with respect to these topics. I have some doubts about the quality of the research on which this list is based, but there is at least some empirical evidence for the factors. My guess is, however, that the lists will not have as much impact as the 5-factor model, because for practitioners, the 5-factor model is as much as needed and as few as possible (and connected to that, we have got to do so much already to get better results and a better school).

As one can expect, the idea of effective schools and especially the factors connected with effectiveness draw attention in other countries. In fact, at the time the results of American researchers were published, in other countries , such as the U.K. research took place to investigate differences between schools with respect to educational outcomes in a broad area like learning results, delinquency-rates and so on (Rutter et al., 1979; Rutter, 1983). Later on, a study by Peter Mortimore and others on junior schools draws attention (Mortimore, Sammons, Stoll, Lewis and Ecob, 1988). Mortimore and his co-workers came to the conclusion that 12 kev-factors that were under the control of the head and the teachers were crucial for effectives. These key-factors were:

1. Purposeful leadership
2. The involvement of the deputy-head
3. The involvement of teachers
4. Consistency among teachers
5. Structured lessons
6. Intellectually challenging teaching
7. Work-centered environment
8. Limited focus within sessions
9. Maximum communication between teachers and pupils
10. Record-keeping
11. Parental involvement
12. Positive climate

(Mortimore, Sammons, Stoll, Lewis and Ecob, 1989)

Comparing the key-factors by Mortimore and others with the factor-model from Edmunds and the list of variables influencing school-effectives by Levine and Lezotte, we can see some congruency between them, but also differences. In the long list by Mortimer et al. and the one by Levine and Lezotte, the factors of Edmunds do not appear. High expectations, emphasis on basic skills, safe and orderly climate do not appear in the same way in the studies by Mortimore and Edmunds. Educational leadership gets a very specific content in the U.K., with the deputy-head who plays a major role in the effectiveness of schools. In the eighties quite a lot of research with respect to school-effectiveness took place in The Netherlands (for a review, see Creemers, 1989 and Scheerens, 1990). In this research could be proved, and that was the positive part of the conclusions, that between 12 and 18 percent of the variance could be explained by school-factors. The negative part of it was that most of the factors included in the studies derived from research in the United States, did not explain very much.

Scheerens and Creemers provided an overview of Dutch studies so far and the significant relationsships found (see table 1). In comparison with American and British research, some of the results are striking, e.g. for educational leadership, that only in one study empirical evidence could be found. More empirical evidence was available for the factors: orderly climate, frequent evaluation, achievement-orientation. The earlier Dutch studies could, like the American ones, be criticized. According to Ralph and Fenessey (1983) these studies could be criticized for methodological flaws and technical research-problems, but also later studies in which these problems were solved, show comparable results.

Table 1

Table 1.1
Overview of Dutch Effectiveness Studies

Indicator / Author	General measure of school-climate	Educational leadership	Orderly climate	Basic skills	High expectations	Frequent evaluation	Direct instruction	Achievement orientation
Meijnen, 1985							+	
Marwijk-Kooy, 1985[a]	+		+		+	+		
Hoeven van Doornum, Jungbluth, 1987								
Stoel, 1986[a]			+			+		
Bosker, Hofman, 1987								+
Brandsma, Stoel, 1987[a]		+				+		
Vermeulen, 1987			+					
Tesser, 1985[a]								
Van der Wolf, 1985							+	
Brandsma, Knuver, 1988								
Van der Werf, Tesser, 1989					+	+		+
De Jong, 1988								+

[a] Secondary schools; unmarked: Primary schools; + means significant positive relationship with effectiveness indicator.

Source: Scheerens and Creemers (1989, p.695)

So, between countries the results of educational research show quite a lot of differences in the factors that contribute to school-effectiveness. Some of the differences can be explained by the differences in context and differences between the educational systems of the countries, or, in other words, it is at least interesting to look at factors in the societal and educational systems of the countries. However, it can also be the result of conceptual and methodological problems in the research on school-effectiveness within countries or between countries. Before we deal with the explanations for the differences in the results between countries we shall first sum up the points these studies have in common:

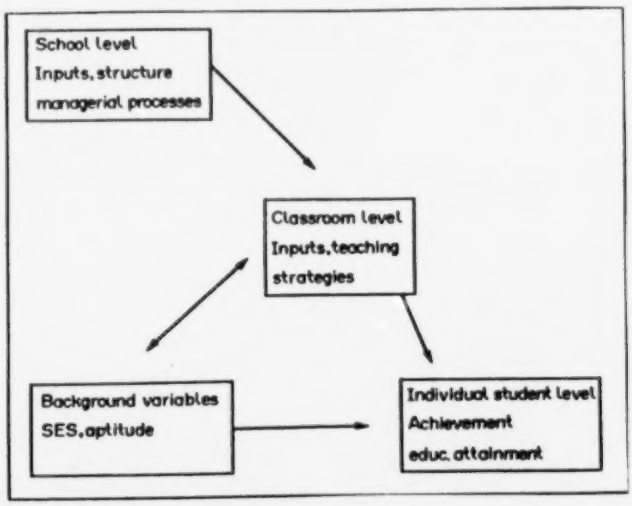
1. All the studies are outcome-oriented, i.e. the ultimate criteria for educational effects are learning outcomes (that what should be achieved by education in schools). Educational improvement within the paradigm of school-effectiveness and school-effectiveness research has as its point of departure that schools have to deal with learning and learning-results. After that statement, there are a lot of differences: sometimes learning-outcome is defined as 'school-career' (the transition from one grade to another or learning-results, with correction for differences in entering-behaviour (added value).
2. Educational effectiveness-research is looking for factors, variables and determinants for educational effectiveness. Outcome is important, but the task of education and educational research is to look for factors that can explain differences in outcomes.
3. Within the framework of factors it is important that school-effectiveness contains effectiveness of the school as an organization and instructional system, but also what happens on the classroom-level or the levels above the school. Especially later on, research moved from school-effectiveness to educational effectiveness as a combination of contextual, school- and instructional effectiveness.
4. School-effectiveness theory and reserach is moving from a school-oriented theory and research-programs to a program about "what works in education" and "why".
5. Because of the fact that educational effectiveness research deals with what works in education and stems from the idea that education should contribute to learning results of all children (including disadvantaged groups), there has always been a strong relationship between research and theory on the one hand and practice, improvement of education and educational policy-making on the other. Educational effectiveness provides, therefore, the possibility to combine theory, research and improvement.

Recent research has demonstrated that the influence of school-factors decreases when instructional factors are introduced into the analysis, while other school-factors still have a unique contribution to the explanation of variants in outcomes. Based on the results, we expect factors on the instructional level to contribute to effectiveness (see Levine and Lezotte, 1990, Mortimore, 1989 and Creemers, 1992). the evaluation of student-learning, as a part of the instruction but also on the school-level (see Levine, Lezotte, Mortimore and Scheerens), the organization of the management of the school (educational leadership, see Levine, Lezotte and Mortimore). The results of Dutch research could be explained by the fact that the principal in Dutch schools does not have the same power and responsibility as principals in other countries, and high expectations about student-learning on the school-level, the mission of the school are connected with a restricted set of objectives.

The research itself in different countries shows a lot of differences and is in fact no confirmation of the results found in the U.S.-research. In fact, within countries and between countries we found a lot of contradictory results, so the conclusion about what works in education is a difficult one. Apart from the above-mentioned contextual differences between countries, there could be other reasons for the observed discrepancy:

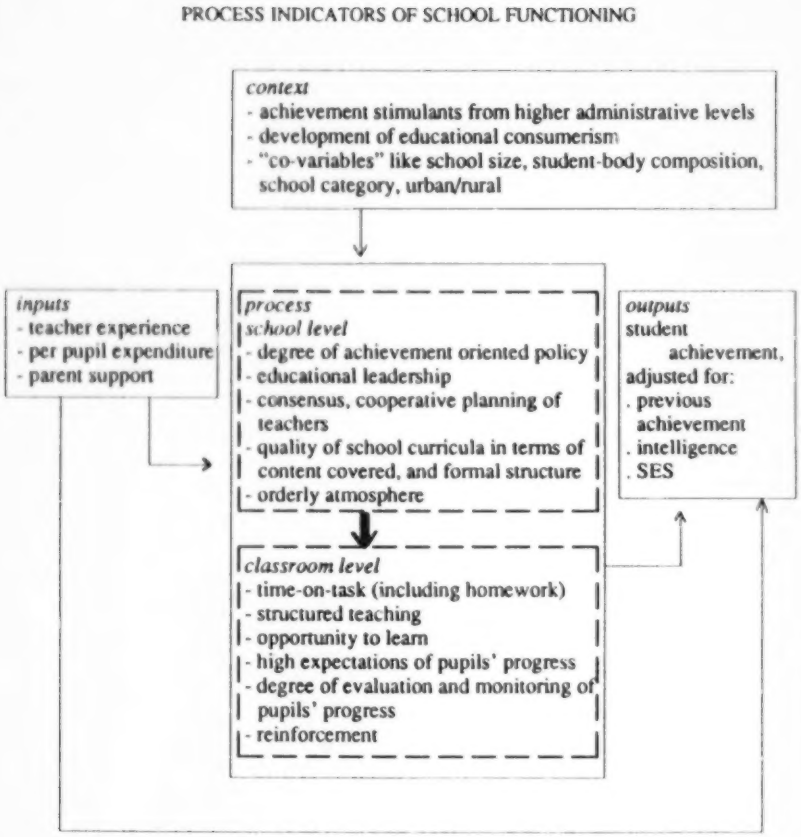
1. An important one is the already mentioned methodological, technical and statistical flaws in the research that was carried out. For example, in the United States school-effectiveness research started with so-called outlier studies. Therefore, we do not know what happens in schools between the outliers. To be able to generalize the conclusions, we need the full spectrum of schools.
2. Sometimes the set of outcome-measures is quite restricted: school-career or learning-results in one instead of the learning-results in several school-subjects.
3. What goes on in schools, the factors for effectiveness of education are often measured in an unsatisfactory manner. Caused by means of a survey instead of by observation, only a few components of the educational process are high-lighted.
4. The earlier studies were just correlational studies instead of studies explaining variance.
5. School-effectiveness research started looking for factors that could explain differences with no theoretical background. It was, in a way, quite empirical, just looking for correlations without any idea behind it about what actually happens in education. This resulted in a number of conceptual problems, e.g. it was not clear what was a cause and what an effect, the factors were situated on several levels in education and instruction (e.g. the school-level, the instructional level and so on). Several authors (Reynolds, Scheerens and Creemers) make a plea for a better conceptual model that distinguishes more levels in education and more factors in a mutual relationship within the levels. Furthermore, the contextual nature of education should be taken into account. The basic model Scheerens and Creemers developed is provided in figure 1. Later on, both authors developed a further elaboration of this model (see figure 2: Scheerens 1990 and figure 3: Creemers 1992).

Figure 1



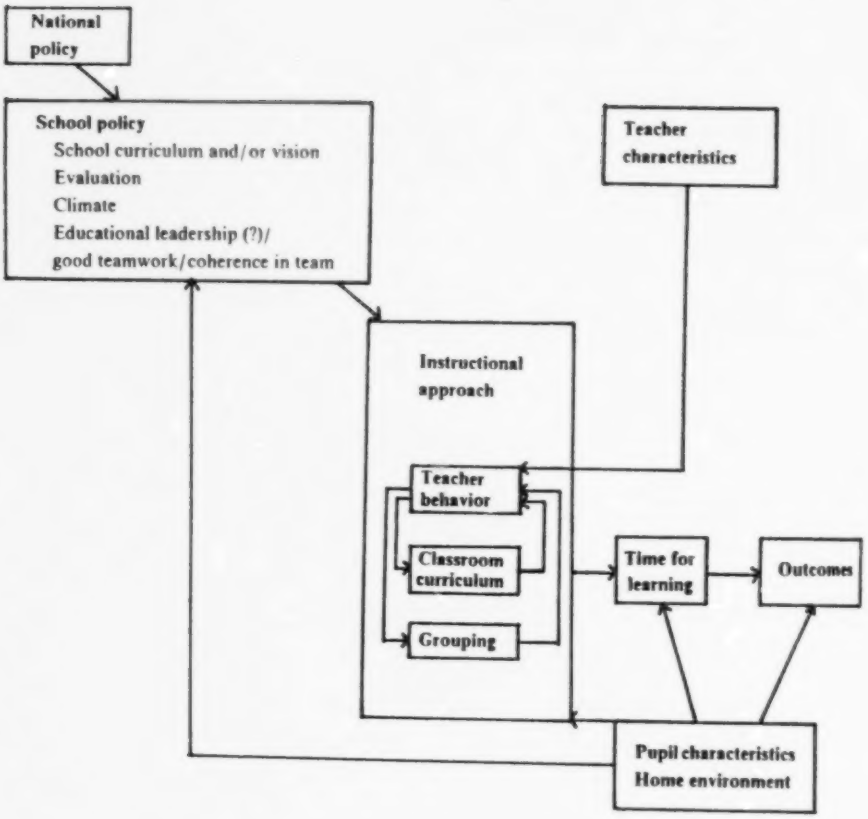
Source: Scheerens and Creemers (1989, p.702)

Figure 2


PROCESS INDICATORS OF SCHOOL FUNCTIONING
context
- achievement stimulants from higher administrative levels
- development of educational consumerism
- "co-variables" like school size, student-body composition, school category, urban/rural
inputs
- teacher experience
- per pupil expenditure
- parent support
process
school level
- degree of achievement oriented policy
- educational leadership
- consensus, cooperative planning of teachers
- quality of school curricula in terms of content covered, and formal structure
- orderly atmosphere
classroom level
- time-on-task (including homework)
- structured teaching
- opportunity to learn
- high expectations of pupils' progress
- degree of evaluation and monitoring of pupils' progress
- reinforcement
outputs
student achievement, adjusted for:
. previous achievement
. intelligence
. SES

Source: Scheerens (1990, p.73)

Figure 3



Source: Creemers (1992, p.128)

3. International studies

The national studies do not provide information that makes it possible to draw conclusions about the generalizibility about the characteristics or factors for educational effectiveness. Considering the studies, it is plausible that some factors are more general than others, but even when the research carried out does not show the flaws of the past and uses a better conceptual framework, some contextual factors, such as consensus, may influence the results, i.e. may influence the way in which factors contribute to effectiveness. The above-mentioned example concerning educational leadership is useful in this respect. The very consensus-oriented democracy in The Netherlands and the fact that the status of the principal is more 'primus inter pares' (the first among equals) instead of a person in charge of the management of a school and the instructional management can explain the fact that educational leadership does not work in The Netherlands.

Aside from other objectives for comparative research, such as finding out what the results of the national educational system are compared to the outcomes of educational systems in other countries, from the point of view of a theory about the educational effectiveness are more more reasons to carry out international comparison in order to provide information about which factors travel from country to country and, more specific, what contributes to effectiveness in the context of schools. Even when schools are places to teach and learn and the processes going on there are quite comparable, the conditions for schooling and education are different from country to country. International comparative research reveals this kind of information.

The studies by the International Association for the Evaluation of Educational Achievement (IEA) are especially carried out to provide insight in educational outcomes of participating countries. IEA started in the late fifties and has since then carried out studies in language, arts, mathematics, science, classroom-environment, educational technology and is now again preparing evaluation-studies in mathematics and science. The studies itself are very careful and provide an enormous amount of data, not just concerning educational outcomes (the main focus of the studies) but also about the educational process to achieve the goals.

A disadvantage of the IEA is the fact that these studies require quite a long period of time (up to 10 years), which is due to the negotiations with different countries about funding, negotiations within the project-team itself concerning the test-items, the methods of data-collecting and the analysis per country and between countries. However, the advantages is that it provides data-sets that are quite unique and provide a great source for secundary analysis. It has turned out that most of the time only the first analysis, the overall analysis, with all the countries involved received the most attention from educational practitioners and policy-makers ('Where is our country in the international competition?'). But, further analysis about what goes on in education with respect to specific school-subjects and the way it contributes to outcomes and maybe can explain some of the differences in the participating countries is more interesting, at least to educational researchers and educational theorists.

At this moment, we have a competitive international study going on, namely "International Assessment of Educational Progress" (IAEP) carried out by the Educational Testing

Service (ITS). The ITS carries out the national assessment program in the United States, and the translation of the English texts developed in the U.S. are made avaible for other countries, which all have their own specific reasons to collect the data. The analysis and the international comparisons are, again, performed by the ITS, and they do it fast. On the other hand, however, there is a great disadvantage, namely the cultural bias of the tests done in the U.S.A. In addition to this, international study does not provide much insight in what works in education, or, in other words, which factors contribute to educational outcomes in different countries and between countries. Because of the fact that data-sets are available about the context, the background of students and teachers, the teaching-processes and schools, IEA data-sets are interesting for secundary analysis with respect to educational effectiveness.

Up to now, only a few studies available in the secundary analysis are carried out on IEA data-sets in which different countries are engaged. An example of secondary analysis is the study carried out by Lockheed and Komenan on teaching quality and student achievement in Africa. The study of Lockheed and Komenan was directed towards Nigeria and Swaziland, and they made use of data-sets of the second international mathematics study. Table 2 provides us with an overview of the variables, names, descriptions, the means, and standard deviations for Nigeria and Swaziland. Making use of the HLM technique, specifying different models they conclude that the achievement of students in both countries was significantly affected by the school and classroom in which they were enrolled, once effects of family characteristics were controlled. However, the specific school and classroom variables accounting for these differences were not the same in both countries. Substantively, effective teaching practices in one country would be entirely ineffective in another one. For example, in Nigeria mathematics classes who spent more time listening to the teachers introduce and review mathematics outperformed those who were less exposed to direct instruction. The same result was not found in Swaziland. However, teaching time spent monitoring and evaluating student performance was positively associated with achievement in Swaziland, while it had no effect on achievement in Nigeria. A significant proportion of variance in student achievement, 24 % in Nigeria and 16 % in Swaziland, was attributable to between classroom and school factors. School size, class size, and length of the schoolyear have no effect on student achievement, but teaching processes were important in both countries. This means that not teacher quality but teaching practices are important in education.

Table 2

Variable Names, Descriptions, Means, and Standard Deviations (in parentheses) for Nigeria and Swaziland

Variable	Description	Nigeria (N = 700)	Swaziland (N = 587)
SCORE	Student's core test score	14.36 (5.80)	12.92 (6.94)
Background			
YSEX	Student's sex (0 = male; 1 = female)	0.24 (0.43)	0.58 (0.49)
YAGE	Student's age in months	196.20 (20.84)	185.83 (20.30)
YFPROF	1 = Father has professional occupation	0.21 (0.41)	0.13 (0.34)
YPERCEV	Student's self-perception of mathematics ability	3.18 (1.19)	3.91 (1.30)
YMOREED	Years more education expected	3.64 (1.00)	3.26 (0.99)
YMOTIV	Motivation to work hard and do well in mathematics	n.a.	4.18 (1.52)
YPARSUP	Perceived parental support	3.66 (1.53)	n.a.
RURAL	1 = School in rural area	0.22 (0.41)	0.31 (0.46)
School			
ISENROL	School size (number of students enrolled in the school)	1054.2 (354.5)	374.23 (139.86)
ISDAYSYR	Length of school year in days	188.03 (14.04)	191.02 (0.72)
SINGMALE	1 = All male school	0.41 (0.49)	0.03 (0.18)
SINGFEM	1 = All female school	0.10 (0.30)	0.14 (0.35)
Teacher/Class			
TNSTUDS	Class size (number of students enrolled in class)	34.92 (15.05)	38.15 (6.73)
TEXPTCH	Teacher's experience (in years)	8.04 (9.10)	4.78 (4.73)
TEDMATH	Semesters post-secondary mathematics education	3.61 (1.44)	2.97 (2.75)
AVYFPROF	Percentage of professional fathers in each class	0.21 (0.17)	0.12 (0.12)
Teaching process			
TADMNTASK	Weekly minutes for routine administration and maintaining order	70.46 (63.68)	30.60 (28.15)
TINSTASK	Weekly minutes for explaining new material and reviewing old material	117.22 (106.36)	78.38 (45.19)
TMONEVAT	Weekly minutes for testing and grading	162.04 (115.22)	138.21 (39.14)
TLISTL	Weekly minutes students spent listening to whole class lectures	37.70 (33.60)	36.17 (27.47)
TSEATL	Weekly minutes students spent at seat or blackboard	42.28 (38.03)	57.79 (44.59)
TPERSMAT	Use of personally produced teaching materials	5.51 (0.84)	4.55 (1.14)
TPUBMAT	Use of commercially published teaching material	8.76 (1.66)	9.57 (1.68)
OTL	Opportunity to learn (number of test questions covered by teacher during current academic year)	11.40 (10.95)	10.41 (5.38)

Source: Lockheed and Komenan (1989, p.100)

Another study is carried out by Scheerens, Vermeulen en Pelgrim about the generalizibility of the instructional and school-effectiveness indicators across nations. They used the second maths-study data-set and a list of 15 predictor variables mentioned in table 3. These variables are not specific to educational effectiveness, but are used as proxi-variables for educational effectiveness factors. In that respect they are questionable, e.g. 'opportunity to learn' is defined in IEA-studies as 'the indication by the teacher or the student, whether are not the items of the test are covered by the instructional process'. But there is no information at all about 'opportunity to learn' or the time that is spent on the specific item or topic. The same holds for 'expectations': this is rarely a definition of 'high expectations', because high expectations in the educational effectiveness movement means 'the standards the teacher and the student have for their teaching and learning'. In the analysis it turned out that there were differences in the estimates of variance explained by schools and classes between the countries. In a country like Sweden there is no school-variance component, but a rather large variance component on the classroom-level. This is probably a result of the way in which the Swedish society is organized: no differences between catchment-areas and the centralistic way of organizing schools. However, even in Sweden differences still exist or arise behind the classroom-door.

Table 3

List of 15 predictor variables:

- Pupil characteristics
  - father's occupation (*yffocci*),
  - father's education (*yfeduc*).
- Teacher characteristics
  - experience as a mathematics teacher (in years — *texpmth*),
  - time spent on keeping order (in min per week — *tordert*),
  - time spent on teaching (in min per week — *tlisst*).
- Opportunity to learn
  - items to test covered in tuition (*totl*).
- Expectations
  - pupil's expectation of the number of years he/she will follow formal education (*ymoreed*),
  - estimate by teacher of the number of pupils who belong to the top in mathematics (*ttop*).
- Instructional characteristics
  - total time (hours) spent on homework (*yahwkt*),
  - the use of published tests (*tpubst*),
  - the use of teacher made tests (*towntst*).
- School characteristics
  - the number of women teachers in mathematics (*ssommf*),
  - the number of men teachers that teach only mathematics (*sallmm*),
  - the number of meetings of mathematics teachers (*smeet*).
- Contextual characteristics
  - degree of urbanization of the school area (*saera*),
  - class size (*klgrt*).

Source: Scheerens and Creemers (1989, p.792)

The high estimates of the school-variance components for Belgium and The Netherlands are indicative of a strongly differentiated organization of the national school-system (see table 4). Table 5 provides the predictor variables with a significant positive or negative association with mathematic achievement. The predictive variables that showed the strongest and most consistent positive association with mathematics achievement are educational expectations as expressed by pupils and teachers. Further predictor variables that show a consistent positive association with achievement are total time spent on homework and opportunity to learn. The results also indicate that in most cases the selected sets of predictor variables operated more on a classroom-level than on a school-level.

Table 4

Estimates of the Variance Explained by Schools and Classes

Country	Classroom variance component	School variance component
15 Belgium (Flemish)		.50 (.48)
16 Belgium (French)		.64 (.62)
22 Canada (British Columbia)		.27 (.27)
25 Canada (Ontario)	.18 (.17)	.09 (.09)
39 Finland	.45 (.41)	.002
40 France	.17 (.16)	.06 (.05)
43 Hong Kong		.51 (.50)
44 Hungary		.30 (.27)
50 Israel	.22 (.21)	.10 (.08)
54 Japan		.08 (.07)
59 Luxembourg	.29 (.29)	.15 (.15)
62 Netherlands		.67 (.66)
63 New Zealand	.45 (.42)	.01 (.004)
72 Scotland	.34 (.31)	.12 (.05)
76 Sweden	.45 (.45)	.00
79 Thailand		.39 (.38)
81 U.S.A.	.46 (.45)	.10 (.09)

Note: Estimates of the variances expressed in terms of the intra-class correlation coefficient, for all countries, assuming schools are sampled at random within countries and classrooms are sampled at random within schools; the coefficients shown between brackets are the intra-class correlation coefficients are controlling for fathers' occupation (*yfocci*).

Source: Scheerens and Creemers (1989, p.794)

Table 5

Predictor Variables with significant Positive (+) or Negative (−) Associations (5% Level) with Mathematics Achievement, when the Variance Component Model is Analyzed by Means of the VARCL-Programme

Predictor variable	Country	Belgium (Fl.) 15	Belgium (Fr.) 16	Canada (B.C.) 22	Canada (Ont.) 25	Finland 39	France 40	Hong Kong 43	Hungary 44	Israel 50	Japan 54	Luxembourg 59	Netherlands 62	New Zealand 63	Scotland 72	Sweden 76	Thailand 79	U.S.A. 81	Total
Fathers' occupation (*yfocci*)		m	m		+	+	+		+	m				+	+	+	+	+	9
Fathers' education (*yfeduc*)										+									1
Level of expected further education (*ymoreed*)		+	+	+	+	+	+	+	m	+	+	+	+	+	+	+	+	+	16
Homework (*yahwkt*)				−				+	+	+	+		−	+		+	+		9
Teacher experience (*texpmth*)							+	+				+	+	+					5
Time spent keeping order (*tordert*)			−			−	−							−				−	5
Time spent on teaching (*tlistt*)		+						+					+			+			4
Teacher expectations (*ttop*)				+	+	+	+	+	+	+		+	+	+		+		+	13
Use of published tests (*tpubtst*)				+		+			+										3
Use of own tests (*towntst*)								−									+		2
Opportunity to learn (*toil*)		+	m		+		+	m		+	+		+	+	m	+		+	9
Class size (*klgrt*)		−	+			+	+						+	+	+	+			8
Urbanization (*saera*)			+					m	+				−						3
Number of woman teachers (*ssommf*)		+										−				−			3
Number of male teachers (*sallmm*)		+							+	−									3
Number of meetings (*smeet*)																			0

Note: School and classroom predictor variables are corrected for father's occupation or father's education — when a predictor variable was not measured in a country this is indicated by the letter m.

Source: Scheerens and Creemers (1989, p.796)

It is clear that it is very useful to carry out secundary analysis on available international data-sets. This is not just to show differences between countries with respect to educational outcomes, but also with respect to the determinants for educational effectiveness. These determining factors can be found on the classroom- as well as on the school-level, but there is some indication that they can especially be found on the classroom-level. The international secundary analysis provides some evidence for factors and also for the contextual differences that influence educational outcomes. However, international studies, and this is not surprising because they were developed that way, are especially strong in outcome-measurement, but weak in the way they measure factors that contribute to educational effectiveness on the instruction -, school - and contextual level. This is not just the case for the instruments, but also for the way the data are collected. For these large-scale international studies, the only way to collect data on process-variables is by means of surveys, and in several countries teachers and principals are perfectly aware of how to answer these kinds of questions.

4. The researcher's agenda for future research on educational effectiveness

Based on the analysis we carried out in the sections 2 and 3 we have to conclude that for international study we need the development of a model, a theory, a conceptual framework for educational effectiveness. This framework should be multi-level and at least contain a classroom-, school- and contextual level. It should also be multi-factor, so that on each level we find all factors that contribute to the effectiveness of a specific level. The multi-level and multi-factor approach should include the possibility that we can see the same factors between the levels, e.g. what curricular conditions are available for the method on the classroom-level. The framework should also be contextual, taking into account the contextual differences.

With respect to the instrumentation: more attention should be given to outcome-measures, not only cognitive outcomes but also social ans affective outcomes. Special attention shoud be given to the process-measures on the different levels. The only way of getting information on the classroom-level is by means of observation. On the level above the classroom-level, the school- and the educational context, the only way of collecting the information is by means of surveys. As is clear from the multi-level and multi-factor conceptual framework, the statistical procedures for analysis should follow this framework. This means that the adequate technique is a multi-level analysis connected with causal analysis.

At this moment, we do not have a theory and knowledge-base that provide enough empirical evidence to build on. That means that in a research program for international studies on educational effectiveness we have to combine survey research on a large number of students and schools with (in)depth-analysis of schools in countries. In that respect, the so-called outlier-studies which were used in the past to obtain information about what factors distinguish effective and non-effective schools are back again. By means of this (in)depth-analysis, research can be carried out into the schools in transition, going from effective to non-effective and from non-effective to effective. That also includes, aside from (in)depth-analysis and (in)depth-studies and survey-research, longitudinal studies. The International School-Effectiveness Research Program (ISERP), will develop a series of studies will be developed according to the above-mentioned requirements.

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